

Keeping child contrary to law.....	1
Keeping gambling-house.....	41
Keeping house of ill-fame.....	19
Kidnapping.....	1
Killing hogs.....	2
Larceny.....	205
Larceny and burglary.....	2
Larceny, grand.....	25
Larceny, petit.....	11
Larceny from the person.....	3
Larceny in night time.....	4
Lewdness.....	3
Libel.....	2
Maiming.....	2
Making false certificate of receipt authorized by law.....	1
Maliciously injuring and defacing a building.....	1
Malicious mischief.....	9
Malicious threats.....	1
Manslaughter.....	3
Murder, 1st degree.....	8
Murder, 2d degree.....	7
Nuisance.....	570
Obstructing highway.....	12
Obtaining property under false pretenses.....	4
Perjury.....	2
Permitting gambling.....	5
Permitting minors to remain in saloon.....	2
Permitting minors to play billiards in saloon.....	3
Rape.....	3
Resisting an officer.....	9
Robbery.....	12
Seduction.....	10
Selling beer on the Sabbath.....	1
Selling beer within two miles of incorporation.....	1
Selling intoxicating liquor.....	72
Threats to extort money.....	1
Trapping prairie chicken.....	1
Trespass.....	1
Uttering a forged paper.....	5
Vagrancy.....	2
Violating sepulchre.....	1
Violating city ordinance.....	4
Willful trespass.....	1
Total.....	1446

THIRD BIENNIAL REPORT

OF THE

STATE FISH COMMISSION

OF

IOWA.

BEING REPORT FOR THE YEARS 1877-8 AND 1878-9.

[PRINTED BY ORDER OF THE GENERAL ASSEMBLY.]

DES MOINES:

F. M. MILLS, STATE PRINTER.
1880.

THANKS.

To the superintendents and managers of all railroads to which we have applied, also the superintendent of the American and United States Express Companies, we are indebted for many favors; with a liberality that seems anxiety to forward all enterprises that are for the public good, they have generously given aid in every case where it has been deemed by the Commissioner necessary to ask it, and to this generosity much of the success of our work is due. For all their kindness we tender heartfelt thanks, and trust the same pleasant relations may ever exist between these gentlemen and the Iowa Fish Commission.

B. F. SHAW, *Commissioner.*

REPORT.

To HIS EXCELLENCY, JOHN H. GEAR, Governor of Iowa:

IN compliance with our law, I have the honor to report to you the doings of the Iowa State Fish Commission for the past two years.

There have been distributed in the waters of the State a total of 4,807,800 fish of all varieties as against 3,565,700 during the previous two years; being an increase of 1,242,100 for the last two years over the former.

Tables showing what fish, when, and where distributed, will be found in their proper places in this report.

We also have at this date—November 1, 1879—500,000 lake trout eggs laid down in our hatching-boxes, which number it is expected to increase to at least 1,000,000 before the spawning season is over.

Since the last report was made, three fine rearing ponds have been made at the hatching-house, in which to keep fish for the purposes of securing spawn. They are each about twenty-five by thirty feet, and now contain a fine lot of fish, and in time will be of great service in furnishing a home supply of eggs. These ponds are made by damming the out-flowing water from the hatching-house into one pond, 90 x 25 feet; and sub-dividing into three parts with plank partitions. The sides of the ponds are walled with stone. A barn with stone basement 16 x 20 feet, a feed-house for preparing fish food, with arrangements for steaming and chopping food, and a good out-house with rubble front, have been built without any extra cost to the State except for lumber and hardware, of which we have used sparingly; the labor being done by ourselves, and stone taken from adjoining quarries and the hills about the premises. A waste-way with walled sides was put in, and a large portion of the grounds about the ponds have been graveled by our own labor with gravel from the Wapsie. Improvements have been made about our

reservoirs and hatching-troughs and boxes, also to the house and grounds, adding much to their usefulness and beauty. To the good taste and industry of Mr. G. F. Slocum, who superintends the hatching-house, good part of the credit for this work is due.

In this, as in all the work of the Commission, the strictest economy has been used in order to accomplish with the small appropriation the greatest possible amount of good, and it is my conviction that more effective work has been done in Iowa in the past two years than has ever been done with the same expense in the whole history of fish culture; for evidence of which I refer to the details in this report.

The interest in fish culture throughout the world—both public and private—is steadily increasing; and those who best understand and have most thoroughly observed and studied the subject are its most earnest advocates, while the little opposition comes from a want of knowledge of facts. In no state or country has it taken a backward step, and now nearly every state and some of the territories in the Union have a fish commission and provisions for increasing their fish. Illinois, Missouri, Kansas, and Nebraska, our nearest neighbors, have in the past two years been among the last to establish commissions and go seriously to work; and it has been a subject of gratulation that Iowa had set them a good example, and has been able to practically assist them in the beginning of their work, which assistance has been duly publicly acknowledged.

Private establishments for breeding and raising fish, of which there were but two in the State when the Commission was established, have increased to twenty-eight or thirty, due to a great extent to the encouragement and assistance the Commission has been able to give them. If our population increases in the same ratio in the future as in the past few years, every source of food supply should have generous encouragement, and none more so than fish culture.

The correspondence of the Commission has grown steadily until it is an important item in the labor of the Commissioner. Letters of inquiry in regard to methods of constructing ponds, reservoirs, nurseries, hatching-houses, hatching-boxes, trays, screens, and apparatus; when, where, and how to procure the spawn or eggs, and young and old fish for public and private waters; methods of transporting, handling, and feeding; varieties suited to different waters; the size and growth of various kinds of fish; volume and temperature of water for private ponds, and effects on growth of fish; regarding fishing with nets or seines, and the prohibitory laws and penalties for

violation of same, with proper methods for enforcement; the fishway law—liability of mill-owners for not putting them in; requesting plans of fishway; notices of non-compliance with the law, and requests to have law enforced; and other questions, too numerous to mention, make a correspondence more burdensome and important than any one not knowing the facts could possibly estimate.

I would especially recommend such legislation as will secure the enforcement of our protective laws, that are now but poorly, or at best but partially enforced. The beneficial effects of a strict enforcement of the law have been so apparent during the past four years, where it has been enforced, that there can be no question as to the policy that should be pursued in this regard. I also recommend such revision of the fishway law as will provide for putting into our dams some specified fishway that experience has proved cheap, durable and effective. In the opinion of many thoughtful men, this is an absolute necessity if we desire our streams to furnish fish in any large quantities.

Sufficient appropriation should be made to continue the work at the State hatching-house; and to care for such fish and fish-spawn as may be furnished us by the United States Commission, especially carp and California or mountain trout, which, it is understood, they will give an especial attention to; and each year to take the young native fish, that would otherwise die, along the Mississippi river, and distribute them in that river and other suitable waters throughout the State; a work inaugurated by Iowa, and that is surely one of the most effective methods of increasing fish ever resorted to in any country. A few of the fishermen along the Mississippi river, from erroneously conceived opinions of the facts, have made serious objections to the work of the Commission. We took, in the fall of 1876, from places where they would have died, and put into the Mississippi river 1,255,000, and in the fall of 1878, 2,648,500, or in the two seasons 3,903,500 native fish; besides this, all the salmon and shad—migratory and non-migratory fish—planted on the eastern slope of the State, are tributary to the great river. As this is all that has been done that in any way affects such fisherman, it is hard to see of what they can justly complain. Upon the other hand the fishermen, or a portion of them, are working destruction to the fish, and, as a consequence, to their own interests. During the months of April, May, and June, they catch very large quantities of percoids. They have studied their habits until they know their spawning haunts, and the peculiar labors of the fish at that time

make them an easy prey. One market in Anamosa, nearly eighty miles from the river, sold 300 pounds of native fish per week during April and May, and parts of March and June. The members of the bass family in this lot contained not less than 5,000,000 eggs that were a total loss. Consider the number of markets supplied, from the same source at the same time, and you will have some idea of the terrible destruction caused by this untimely fishing. These fish, left for two or three months, would have built nests, deposited their eggs, which they would have carefully guarded during hatching and infancy of the young fish, and thereby secured an increase of their numbers; after which they would have furnished the same or a greater amount of food, and in much better condition than during the spawning period.

I would also call attention to the destruction of fish by the use of seines in quantities aggregating from 20,000 to 100,000 pounds at a haul—quantities so great that it is impossible to economically utilize them; and large portions of which, as I have been informed, have been spoiled and lost to those who were so greedy as to attempt to make use or sale of them. These temporary gains must be, to a regular fisherman, a permanent loss for future years, as well as to every other citizen who has any interest in the fertility of the river, or any pride in the resources of the State. Some plan to stop this wastefulness should be adopted.

A meeting, held in Chicago October 1-3, of the Commissioners and leading fish-culturists and dealers of the Western States, asks Congress to legislate for the protection of fish in the great lakes and those streams that are jointly bounded by several states; also to take charge of and properly stock such waters. It is hoped that such action will be taken promptly as will secure these ends.

FISHWAYS.

The Seventeenth General Assembly took this question up and referred it to the judiciary committee to determine whether the State had the right to compel owners of dams to put in fishways. The committee reported, upon a full discussion and examination of the matter, that the legislature had the right to make laws for, and compel the putting in of fishways.

The following law afterward passed:

CHAPTER 188.

AN ACT to provide for the construction and maintenance of fishways to enable fish to pass over dams across the rivers and streams of the State of Iowa.

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. That the owner or owners of any dam or obstruction across any river or stream, creek, pond, lake, or water-course in this State shall within a reasonable time erect, construct and maintain over or across said dam or obstruction a suitable fishway of suitable capacity and facility to afford a free passage for fish up or down through such water-course, when the water of said stream is running over the said dam.

SEC. 2. Any dam or obstruction mentioned in section one of this act, not provided with such fishway within a reasonable time after the taking effect of this act, is hereby declared a nuisance, and may be abated accordingly.

SEC. 3. Any person guilty of the violation of the provisions of this act, shall, upon a conviction before a justice of the peace, be fined not less than five nor more than fifty dollars for the first offense, and not less than twenty dollars for each subsequent offense, and shall stand committed until such fine is paid.

SEC. 4. This act being deemed of immediate importance shall be in force and take effect from and after its publication in the *Daily State Register* and *Daily State Leader*, newspapers published in Des Moines, Iowa.

Approved March 26, 1878.

It will be seen that this law makes no provision for any officer or person whose duty it shall be to see to its enforcement, and that it merely stipulates that a suitable fishway shall be put in, leaving the question of what a suitable fishway is entirely unsettled, and gives no authority to any person or persons to determine what is a suitable fishway.

The Commissioner has received a number of petitions asking him to enforce the above law. Below we append a copy of one of these petitions:

“OSAGE, IOWA, July 15, 1878.

“We, the undersigned, residents of Mitchell county, Iowa, respectfully ask B. F. Shaw, Fish Commissioner of the State of Iowa, to take the necessary steps to compel the owners of all dams crossing the Red Cedar river, in the State of Iowa, to erect, construct, and maintain fishways over and across such dams, as provided for by the Session Laws of Iowa of 1878—chapter 188, sections 1, 2, 3 and 4.”

In answer to the above petition that was signed by a very large number of citizens of Osage, I wrote them as follows:

"ANAMOSA, IOWA, July 28, 1878.

"C. D. MOWRY AND OTHERS, Osage, Iowa:

"Your petition of the 15th of July came duly to hand, and I take the first opportunity for replying.

"In the law for constructing fishways, chapter 188, you will observe that the only method of enforcement is before a justice of the peace by prosecution (see section 3). A clause giving supervisory jurisdiction to the Commissioner was defeated, and the legislature, by this action, clearly indicated that the enforcement of the law should be left in the hands of the people themselves. I regret that this is so, but, in view of these facts, I feel that I should be assuming too much should I attempt the enforcement of the law, as Commissioner.

"This question was before the Executive Council, and their opinion was that I had no especial powers under the law.

"With such a state of feeling as is indicated by the large number of names to your petition, it would seem no difficult matter to have a prosecution commenced before a justice of the peace as contemplated in the law; and thus the work would be begun that might eventually bring about the desired results.

"Am heartily glad of the interest you and your people are manifesting in the matter. If any mill-owner wishes to put in a fishway, I will, upon application, furnish him a plan free of charge.

"Yours, very truly, B. F. SHAW."

Attorney-General McJunkin also coincided with this view, and thought that any attempt to enforce so loosely constructed a law would prove abortive. The above correspondence shows the character of very many petitions that I received on the subject, as well as numerous letters, and the course I have been compelled to take in the matter.

A large number of mill-owners and others have applied for plans of fishways, which have always been furnished, and several fishways have been put in. Many other owners of dams have, in correspondence, expressed a willingness to put them in as soon as they are assured that they would be put into dams above and below them.

The Executive Council authorized me to procure 1,000 lithograph plans of fishways, which, in conjunction with Michigan, were procured at the exceedingly low price of thirty-one dollars. The plan is the same as has been adopted by the states of Michigan and Minnesota.

In view of the importance of fishways to the fish interests of our State, which has been quite fully discussed in former reports, it is to

be hoped that some plan will be adopted, and some law framed, that will secure to us the much desired results.

NATIVE FISH.

Millions of native fish die in sloughs along the Mississippi river every season when the water is low. The fish deposit their eggs in these sloughs in high water in the spring. The young fish are hatched in due time; afterward the water recedes from the sloughs. They are cut off from the river and gradually dry up, and the young fish perish. The soft-rayed finned-fish die first, leaving the hardier varieties, such as black, yellow, and striped bass, wall-eyed pike, crappies, sunfish, cat-fish, bullheads, drumfish, etc. To save a portion of these fish from certain destruction, and plant them in waters where they could live and thrive, has been one of the most cherished plans of the Fish Commission. To aid in the accomplishment of this purpose, I first saw the superintendents or general managers of the various railways running across the State from the Mississippi river, and procured their consent to assist in the work, by moving an aquarium car, giving us water from their water-tanks, stopping trains to distribute fish, etc., which necessary assistance they cheerfully gave free. Mr. Potter, general superintendent of the C., B. & Q. R'y, kindly furnished a suitable car for the purpose, which in a proper time was arranged in a similar but more effective manner than the one described in a former report, that was used for the same purpose in the fall of 1876. Arrangements were made with Capt. T. G. Pelton, of Clinton, Iowa, for the use of his little steamer "Dart," and a flat-boat or barge, and they were fitted up for the convenience of an effective crew of fishermen. These boats, a skiff, twelve live-boats for young fish, minnow nets, etc., constituted our outfit.

On the second day of September, 1878, with a crew of twelve men, all told, we started on the trip. A memorandum of dates, where we were, what doing, and the numbers of fish caught, will be found in another place in this report. Also a report showing when and where fish were deposited in the inland waters of the State.

The trip was eminently successful, especially so in the first part. As estimated each day by the men engaged in the work, there were taken during the trip 164½ bushels of these young fish. Estimated at the same rate per bushel as in 1876 we took 3,290,000. We fished usually only such sloughs as were entirely cut off from the river and

nearly dry, and such as have since been entirely dry. The fish taken from them were saved from certain death, and were just as much of an accession to our waters as if they had been hatched and reared to the same size and age. They were natives of our waters, healthy and beyond the most hazardous period of their lives, and used to finding their own food. If the waters of a great river can be stocked in a few years with a few dozen fish, as has been done with bass in the Potomac and Connecticut rivers, surely we have a right to hope much from so extensive a planting as this in our rivers and lakes.

The malarial season of 1878, the extremely low water during the hot season of the year, the hot days and cold nights, working in the most filthy sloughs of the Mississippi river, in mud and filth, and with continuously wet clothing, had the effect to prostrate every one of the original crew but myself with malarial fevers or ague, from which several did not recover for a long time, and one Mr. S. C. Hall, at this writing, has an occasional shake. Otherwise the trip was as successful and prosperous as the most sanguine could have expected. The total cost of the trip was less than eight hundred dollars, which amount would make the cost of the fish caught and distributed less than twenty-five cents per thousand. This work, for cheapness and effectiveness, I think can scarcely find an equal in the whole history of fish culture, and for this our Commission and the people at large are greatly indebted to the railroads for their free and generous aid, without which the work would have been impossible.

MEMORANDA

Of Mississippi River Trip.

DATE.	WHERE AT WORK.	State of weather.	No. bushels fish caught.
1878.			
Sept. 2	Aquarium car, with fishing and camping outfit, started for Lyons, from Anamosa, in charge of G. F. Slocum and George Wescott		
3	Commissioner, with balance of crew (8 men), started for Lyons from Anamosa at 6 A. M.; arrived at Lyons 9 A. M.; then all hands at work "fitting up" the boat. At 4 P. M. we started up the river, ran 12 miles, and "tied up" for the night	Pleasant	
4	Run to 4 miles above Bellevue, and "tied up" for the night	Pleasant	
5	Made a good run; stopped at Dubuque for coal and supplies; tied up 12 miles above Dubuque	Pleasant	
6	Run all day; tied up 10 miles below McGregor	Pleasant	
7	Run to Lansing	Pleasant	
8	Sunday. Run 3 miles, and tied up, ready for fishing in the morning	Rainy	
9	Commenced seining this morning; tied up at Lansing to-night	Pleasant	3
10	Tied up 10 miles below Lansing for the night	Very windy	6
11	Tied up 4 miles below Linkstown for the night	Very windy	8½
12	Tied up at McGregor for the night	Pleasant	4½
13	While waiting at McGregor for railroad transportation orders for aquarium car, we fished above, and run back to McGregor for the night	Pleasant	1¼
14	Commissioner and E. R. Shaw started with car of fish over Chicago, Milwaukee & St. Paul railroad; went as far west as Spencer. Boat at McGregor fixing wheel	Pleasant	
15	Sunday, at McGregor		
16	Tied up for the night 2 miles above Clayton	Pleasant	8¾
17	Run 12 miles	Pleasant	1½
18	Run to Buena Vista this afternoon, and shipped car of fish over Turkey River Branch of Chicago, Dubuque & Minnesota Railroad. Commissioner, E. R. Shaw, and Wm. Dennison with car	Rainy	7½
19	All back to boat at 11 A. M., after which we had the biggest day's catch of the trip; tied up opposite Buena Vista for the night	Wind and rain storm to-night	13
20	Were blown on a sand-bar this A. M.; was most of forenoon getting off; tied up opposite Waupeton for the night	Very windy	4
21	Run to within 10 miles of Dubuque, and tied up for the night	Very windy	9
22	Sunday	Very windy	
23	Run to Dubuque to-day; shipped car of fish this P. M. over Illinois Central railroad. Commissioner and G. F. Slocum went west with car	Pleasant	7½
24	Made a run of 30 miles; tied up 2 miles above Bellevue	Windy	1¼
25	Made a couple of hauls near the camp this morning, after which we started out, but were blown on a sand bar, and were unable to get off until night	Heavy wind	½

MEMORANDA—CONTINUED.

DATE.	WHERE AT WORK.	State of weather.	No. bushels fish caught.
1878.			
Sept. 26	Tied up to-night 10 miles above Savanna	Windy	4 $\frac{3}{4}$
27	Tied up at Sabula to-night; after dark our steamer run to Lyons for repairs	Fair	10
28	Shipped car of fish over Sabula, Ackley & Dakota railroad. Commissioner and E. R. Shaw with car.	Fair	
29	Sunday		
30	Fished opposite Sabula all day	Windy	5
Oct. 1	Fished above Sabula, back to Sabula to-night	Very windy	4 $\frac{1}{2}$
2	Tied up 16 miles below Sabula.	Pleasant	3 $\frac{3}{4}$
3	Run to Clinton	Pleasant	7
4	Shipped car of fish over Chicago & Northwestern railway; Commissioner and G. F. Slocum with car. Fished near Clinton.	Windy	1
5	Left Clinton; ran 8 miles	Windy	6
6	Sunday. Camped one-half mile below Albany.		
7	Run 5 miles; found poor fishing on account of high water.	Pleasant	1 $\frac{3}{4}$
8	Were unable to run to-day on account of high wind, but found splendid fishing within one-half mile of camp.	Very windy	12 $\frac{1}{2}$
9	Got started at 2 A. M., and ran to LeClaire, where we got a pilot and ran the rapids to Davenport.	Pleasant	
10	Commissioner, E. R. Shaw, and C. S. Cooper started west with car of fish over Chicago, Rock Island & Pacific railroad. Boat ran 12 miles and tied up for the night.	Pleasant	2 $\frac{1}{2}$
11	Run 13 miles	Pleasant	3
12	Run to Muscatine.	Pleasant	2
13	Sunday. At Muscatine.	Pleasant	
14	Commissioner and G. F. Slocum left Muscatine, with car of fish, over Southwestern Division of C., R. I. & P.; were unable to do much with boat on account of high wind.	Very windy	
15	Run 2 miles	Rain all day	4
16	Run 6 miles	Windy	10
17	Run 13 miles	Very windy	11 $\frac{1}{2}$
18	Run 30 miles	Very windy	4
19	Run to Burlington	Very windy	5
20	Commissioner Shaw, E. R. Shaw, and S. C. Hall started with car of fish over C., B. & Q.	Fair	
21	Boat left Burlington at 11 A. M., on return trip up river; run 22 miles.	Rain	
22	Run 26 miles	Pleasant	
23	Run 34 miles	Pleasant	
24-25	Run to Davenport, where we lay the balance of day, and 25th waiting for a tow over the rapids.	Fair	
26	Started over the rapids at 2 A. M. in tow of steamer "Last Chance"; run (42 miles) to Lyons, where we arrived in time to take the evening train on "Midland Div." of Chicago & Northwestern R'y for Anamosa	Little snow	
	Total number bushels fish caught		164 $\frac{1}{2}$
	Estimated at 20,000 to the bushel.		3,290,000

FISH DEPOSITED

From aquarium car from September 2, to October 26, 1878.

COUNTY.	IN WHAT WATERS.	NUMBER.
Clayton	Bloody run	5,000
Winneshiek	Turkey river	5,000
Chickasaw	Crane creek	1,000
Chickasaw	Little Cedar	2,000
Chickasaw	Three Wapsies	8,000
Floyd	Cedar river	7,000
Floyd	Shell Rock	7,000
Floyd	Flood creek	1,000
Cerro Gordo	Lime creek	3,000
Cerro Gordo	Willow creek	3,000
Cerro Gordo	Clear Lake	5,000
Hancock	Branches of Iowa river	5,000
Hancock	Boone	2,000
Kossuth	East Des Moines	5,000
Palo Alto	Medinno Lake	5,000
Palo Alto	West Des Moines	5,000
Palo Alto	Elbow Lake	5,000
Clay	Little Sioux river	10,000
Clayton and Fayette	Buena Vista to Waudena	50,000
Dubuque	Little Maquoketa	5,000
Dubuque	North Maquoketa	3,000
Dubuque	Catfish creek	4,000
Delaware	Willow creek	2,000
Delaware	South Maquoketa	5,000
Buchanan	Buffalo	4,000
Buchanan	Wapsie	7,000
Black Hawk	Cedar river	7,000
Butler	Beaver	3,000
Hardin	Iowa river	7,000
Hamilton	Boone river	7,000
Webster	Des Moines river	7,000
Webster	Lizzard	2,000
Pocahontas	Cedar creek	2,500
Buena Vista	North 'Coon	3,000
Buena Vista	Storm Lake	7,000
Cherokee	Little Sioux	7,000
Plymouth	Floyd river	10,000
Clinton	Elk river	10,000
Clinton	Sugar creek	3,000
Jackson	Preston creeks	3,000
Jackson	Deep creek	10,000
Jones	Wapsie	10,000
Linn	Big creek	3,000
Linn	Crab Apple	5,000
Linn	Indian	5,000
Linn	Cedar river	10,000
Cedar	Clear creek	2,000
Clinton	Brophy's creek	1,000
Clinton	Silver creek	5,000
Clinton	Wapsie	5,000
Linn	Crab Apple	2,000
Linn	Indian	1,000
Linn	Prairie creek	1,000

FISH DEPOSITED—CONTINUED.

COUNTY.	IN WHAT WATERS.	NUMBER.
Benton	Prairie creek	3,000
Tama	Salt creek	1,000
Tama	Otter creek	3,000
Tama	Iowa river	5,000
Marshall	Lynn creek	3,000
Story	Skunk river	5,000
Story	Squaw creek	2,000
Boone	Des Moines river	8,000
Greene	Hardin creek	3,000
Greene	North 'Coon	8,000
Carroll	Storm creek	3,000
Carroll	'Coon	3,000
Crawford	Boyer river	5,000
Harrison	Boyer river	5,000
Harrison	Willow creek	3,000
Harrison	Lakes	3,000
Monona	Lakes	8,000
Muscatine	Sugar creek	2,000
Muscatine	Cedar river	5,000
Muscatine	Wapsienonoc	3,000
Johnson	Iowa river	8,000
Johnson	Clear creek	2,000
Iowa	Bear creek	5,000
Poweshiek	Little Bear creek	3,000
Jasper	North Skunk river	5,000
Jasper	South Skunk river	5,000
Polk	Four Mile creek	2,000
Polk	Des Moines river	6,000
Dallas	'Coon	8,000
Guthrie	Reservoir	1,000
Guthrie	Middle river	5,000
Cass	Turkey	1,000
Cass	Troublesome	2,000
Cass	Nishnabotna	8,000
Shelby	West Nishnabotna	5,000
Shelby	Silver creek	2,000
Pottawattamie	Walnut creek	2,000
Pottawattamie	Keg creek	3,000
Pottawattamie	Mosquito creek	5,000
Muscatine	Keokuk lake and slough	7,000
Muscatine	Lake on Muscatine island	4,000
Louisa	Lake near Fredonia	2,000
Louisa	Cedar river	10,000
Washington	Washington reservoir	5,000
Washington	Skunk river	5,000
Washington	Crooked creek	3,000
Jefferson	Walnut creek	2,000
Jefferson	Big Cedar	7,000
Jefferson	Citizens of Jefferson	8,000
Wapello	Des Moines	12,000
Davis	Soap creek	5,000
Appanoose	Chariton river	8,000
Wayne	Walnut creek	1,000
Wayne	South Chariton	4,000
Des Moines	Cedar	1,000
Henry	Lynn creek	4,000
Henry	Skunk river	6,000
Jefferson	Big Cedar	3,000

FISH DEPOSITED—CONTINUED.

COUNTY.	IN WHAT WATERS.	NUMBER.
Wapello	Des Moines	8,000
Monroe	Albia	2,000
Monroe	Cedar creek	3,000
Lucas	Chariton	3,000
Clarke	White Breast	3,000
Union	Grand river	2,000
Union	Twelve Mile	3,000
Union	Creston	5,000
Adams	Platte river	4,000
Adams	East Nodaway	5,000
Montgomery	Middle Nodaway	3,000
Montgomery	West Nodaway	3,000
Montgomery	Nishnabotna	8,000
Mills	West Nishnabotna	5,000
Mills	Silver creek	5,000
Mills	Keg creek	5,000
Mills	Mosquito creek	5,000
	Railroad reservoirs, C., B. & Q. R. R.	12,000
Total number distributed		641,500

The fish distributed as shown by the above table were black and striped bass, wall-eyed pike, crappies, sunfish, perch, drum fish, channel catfish, etc. They were good, healthy fish, used to finding their own food, natives of our waters, and beyond most of the dangers incident to young fish. The Potomac river was originally stocked with black bass by a couple of dozen carried over the Alleghany mountains in the tank of an engine. The Connecticut was stocked also with a small number of fish of the same kind only a few years ago. They are now both good bass streams; and if such results follow the planting of a few bass, it is only fair to hope that the planting of these hundreds of thousands in our now depleted waters will largely increase the numbers and the varieties of fish in our lakes and streams. Their distribution was as general throughout the State as the magnitude of the work would admit, and they went into nearly every stream crossed by a broad-gauge railroad running west from the Mississippi river.

I believe this to be as valuable a planting of fish as has ever been made in all the history of fish culture, and only possible in a very few sections of this country. The plantings were principally made directly from the aquarium car, as it was impossible except by telegraph to notify distributors when we could arrive at any given place; and for this purpose the railways laid us under very especial obligations by stopping their trains, whenever they could do so without danger, to permit such distribution.

SHAD.

By corresponding with S. F. Baird, U. S. Fish Commissioner, I learned that the U. S. Commission would furnish our State with shad during the season of 1878. I received a telegram from Hon. J. Milner, Deputy U. S. Commissioner in charge of shad-hatching, to come for them. I accordingly left Anamosa for the U. S. shad-hatching station near Havre de Grace, on Monday, May 27, 1878. There I procured 100,000 shad. These were safely transferred to Iowa waters, and planted on June 11-12, as follows: 40,000 in Cedar river at Cedar Rapids; 40,000 in the Des Moines river at Moingona; and 20,000 in the Boyer river.

Shad have been caught in the Ohio for the past two years, weighing from 2½ to 4 pounds. They evidently came from young shad planted at Salamanca in the year 1872. This being the case I can see no good reason why those planted in Iowa in 1874, 1875, and 1878 should not prove alike a success in due time.

LAKE TROUT DISTRIBUTION, 1878.

DATE.	BY WHOM.	IN WHAT WATERS.	NO.
Jan. 29	W. G. Allen	Cedar river	10,000
Jan. 29	W. G. Allen	Iowa river	10,000
Jan. 29	W. G. Allen	Allen's ponds	5,000
Jan. 29	A. Hatlenberger	St. Joseph's Academy	5,000
Jan. 29	A. Hatlenberger	Catfish creek	8,000
Jan. 29	A. Hatlenberger	Little Maquoketa	7,000
Jan. 30	J. Smart	Little Wall Lake	10,000
Jan. 30	J. Smart	Lake Carr	10,000
Feb. 14	F. Dumont	Dutch creek	1,000
Feb. 14	Spilster	Walnut	5,000
Feb. 14	J. Millar	Muscatine slough	10,000
Feb. 14	J. Millar	Millar's ponds	5,000
Feb. 14	Peet	Peet creek	10,000
March 13	Col. Peters	Delhi lake	5,000
March 18	W. Mynster	Ponds	5,000
March 18	W. Mynster	Silver Lake	10,000
March 18	Parks	Hampton	5,000
March 18	Shaw	Iowa river	10,000
March 18	Shaw	Cedar river	20,000
March 18	J. J. Smart	Lakes, Story county	20,000
March 24	Shaw	Iowa river, north	10,000
March 24	Shaw	Clear Lake	20,000
March 28	Shaw	Wall Lake	20,000
March 28	Shaw	Des Moines	20,000
April 3	J. Hall	Chariton	10,000
April 3	J. Hall	White Breast	5,000
April 3	J. Hall	Grant river	10,000
April 4	Hall & Shaw	Afton	8,000
April 4	Hall & Shaw	Twelve Mile	10,000
April 4	Hall & Shaw	Creston	8,000
April 4	Hall & Shaw	Platte river	10,000
April 4	Standly	Platteville	8,000
April 4	Conductor	102 Creek	5,000
April 22	Shaw	Boone river	5,000
April 22	Shaw	Lake Como	10,000
April 22	Citizens of Pomeroy	Twin Lakes	15,000
April 22	Shaw	Des Moines river	10,000
April 22	Shaw	Storm Lake	20,000
April 22	Shaw	Little Sioux	10,000
April 22	Shaw	Plymouth county	20,000
April 25	Hyde	Cedar river	5,000
April 25	Hyde	Iowa river	5,000
April 25	Hyde	Allen's	10,000
April 25	Shaw	Copper creek	15,000
April 25	Shaw	Deep creek	5,000
April 25	Shaw	Silver creek	5,000
April 25	Shaw	Rock creek	5,000
April 29	Shaw	Cedar river	20,000
April 29	Shaw	Shell Rock	20,000
April 29	Shaw	Lime creek	15,000
April 29	Shaw	Clear Lake	20,000
April 29	Shaw	Des Moines river	10,000
April 29	Shaw	Eagle Lake	10,000
April 29	Shaw	Medium Lake	10,000

LAKE TROUT DISTRIBUTION, 1878—CONTINUED.

DATE.	BY WHOM.	IN WHAT WATERS.	NO.
May	8 Shaw.....	Lakes in Monona county.....	12,000
May	8 Shaw.....	Lakes in Harrison county.....	6,000
May	8 Shaw.....	Spoon Lake.....	3,000
May	8 Shaw.....	Grass Lake.....	2,000
May	8 Shaw.....	Wm. Mynster.....	2,000
May	8 Shaw.....	Big Lake.....	6,000
May	8 Shaw.....	Iowa river.....	5,000
May	8 Shaw.....	Skunk river.....	5,000
May	8 Shaw.....	'Coon river.....	5,000
May	8 Shaw.....	Boyer river.....	5,000
May	8 Millar.....	Chain Lake.....	5,000
May	8 W. A. Mynster.....	Council Bluffs.....	2,000
May	8 J. Millar.....	Muscataine.....	1,000
Total.....			619,000

LAKE TROUT DISTRIBUTION, 1879.

DATE.	BY WHOM.	IN WHAT WATERS.	NO.
Jan.	31 B. F. Shaw.....	Iowa river.....	5,000
Jan.	31 B. F. Shaw.....	Skunk river.....	10,000
Jan.	31 B. F. Shaw.....	Mud Lake.....	10,000
Jan.	31 B. F. Shaw.....	Wall Lake.....	10,000
Jan.	31 J. W. Townner.....	Des Moines.....	7,000
Feb.	12 B. F. Shaw.....	East 'Coon.....	10,000
Feb.	12 H. K. Soper.....	Carroll.....	7,000
Feb.	12 B. F. Shaw.....	Middle 'Coon.....	10,000
Feb.	12 B. F. Shaw.....	Wall Lake.....	20,000
Feb.	12 B. F. Shaw.....	Maple river.....	10,000
Feb.	24 I. Peet.....	Lisbon.....	3,000
March	1 B. F. Shaw.....	Emmetsburgh.....	24,000
March	1 B. F. Shaw.....	Lost Island Lake.....	24,000
March	1 A. A. Mosher.....	Spirit Lake.....	30,000
March	1 A. A. Mosher.....	Okoboji.....	24,000
March	10 S. Snyder.....	Okoboji.....	20,000
March	10 B. F. Shaw.....	Elbow Lake.....	20,000
March	21 B. F. Shaw.....	Clear Lake.....	60,000
March	21 B. F. Shaw.....	South Maquoketa.....	5,000
March	22 B. F. Shaw.....	North Maquoketa.....	5,000
March	22 B. F. Shaw.....	Twin Lakes.....	20,000
March	22 B. F. Shaw.....	Storm Lake.....	20,000
March	22 O. O. Bennett.....	Le Mars.....	10,000
March	22 B. F. Shaw.....	Earlville.....	5,000
March	22 B. F. Shaw.....	Manchester.....	5,000
March	22 B. F. Shaw.....	Turkey river.....	5,000
March	22 B. F. Shaw.....	Volga river.....	5,000
May	20 B. F. Shaw.....	Along St. Paul railway.....	25,000
June	27 Mr. Root.....	Clarence.....	2,000
Total.....			411,000

SALMON.

Full grown salmon have been taken during the past season from the Potomac, Delaware, Hudson, Saranac, Connecticut, Farmington, Mill and Genesee rivers, of which full accounts have come to hand. In none of these rivers have any salmon been caught before within the past twenty years. The fish caught were described as being full of roe, and were evidently seeking spawning grounds in the rivers in which they had been planted six years before. The fact that it has been a preconceived opinion that salmon returned in three years to their rivers, and that they had not been caught in the tributaries of the Mississippi, has been thought discouraging; but in view of the facts that salmon were caught in all the above streams six years after planting, and not before, gives an entirely different view of the matter. As the first salmon planted in Iowa were planted by Mr. Haines, in the Cedar river, December 5, 1874, we need not expect their return according to the experience above named before the season of 1880 or 1881. Until the success or failure of this work is ascertained, it would not be policy to do much more with salmon as sufficient has already been done to give it a fair test.

CALIFORNIA SALMON.

Distribution since last report.

DATE.	BY WHOM DISTRIBUTED.	IN WHAT WATERS.	NO.
1878.			
April 4	B. F. Shaw.....	Iowa river.....	5,000
April 4	B. F. Shaw.....	Copper creek.....	5,000
April 29	B. F. Shaw.....	Shell Rock.....	5,000
April 29	B. F. Shaw.....	Des Moines.....	10,000
April 29	B. F. Shaw.....	Silver creek.....	5,000
June 10	B. F. Shaw.....	Coon river.....	5,000
June 10	B. F. Shaw.....	Skunk river.....	5,000
June 10	B. F. Shaw.....	Boyer river.....	5,000
June 16	B. F. Shaw.....	Cedar river.....	5,000
June 16	B. F. Shaw.....	Wapsie.....	5,000
1879.			
Jan. 27	— Thornly.....	Sioux City.....	4,000
Jan. 31	B. F. Shaw.....	Mud Lake.....	10,000
Jan. 31	B. F. Shaw.....	Skunk river.....	10,000
Jan. 31	B. F. Shaw.....	Wall Lake.....	10,000
Jan. 31	J. W. Towner.....	Towner's Lake.....	7,000
Jan. 31	B. F. Shaw.....	Iowa river.....	7,000
Feb. 12	B. F. Shaw.....	Des Moines river.....	10,000
Feb. 12	B. F. Shaw.....	East Coon.....	10,000
Feb. 12	B. F. Shaw.....	Middle river.....	10,000
Feb. 12	B. F. Shaw.....	Wall Lake.....	20,000
Feb. 12	B. F. Shaw.....	Maple river.....	10,000
Feb. 20	B. F. Shaw.....	Maquoketa.....	10,000
Feb. 20	B. F. Shaw.....	Turkey.....	3,000
Feb. 24	Mr. Peet.....	Lisbon.....	4,000
March 10	G. F. Slocum.....	Wapsie.....	10,000
March 17	B. F. Shaw.....	Big Rock.....	3,000
March 22	B. F. Shaw.....	Boone river.....	10,000
March 22	B. F. Shaw.....	Upper Des Moines.....	10,000
March 22	O. O. Bennett.....	Plymouth and other counties.....	15,000
March 28	B. F. Shaw.....	Cedar river.....	5,000
April 1	B. F. Shaw.....	East Skunk river.....	2,500
April 1	B. F. Shaw.....	West Skunk river.....	2,500
May 14	B. F. Shaw.....	Maltby Kellogg.....	2,500
May 19	J. Hall.....	Streams along C., B. & Q.	12,000
May 20	B. F. Shaw.....	Independence.....	4,000
May 20	B. F. Shaw.....	Volga.....	5,000
May 20	B. F. Shaw.....	Turkey river.....	5,000
May 30	E. R. Shaw.....	Cedar river.....	10,000
May 30	E. R. Shaw.....	Spring branch.....	5,000
Total.....			281,500

The last 15,000 were furnished by Shaw & Co., in exchange for 3,000 yearlings, as per agreement with Governor Gear.

LAND-LOCKED SALMON.

We have received two small consignments of these valuable fish eggs. Those hatched in the spring of 1878 were attacked with blue sack, and we succeeded in getting only 15,000 out of 50,000 forward enough for distribution. Those of 1879 are what are left, being kept in hopes to be able to make some arrangement to procure eggs from them in future. Those of 1878 were distributed as follows:

DATE.	BY WHOM DISTRIBUTED.	IN WHAT WATERS.	NO.
1878.			
April 29	B. F. Shaw.....	Silver creek.....	3,000
May 6	B. F. Shaw.....	Clear Lake.....	3,000
May 6	B. F. Shaw.....	Cedar river.....	3,000
May 6	B. F. Shaw.....	Iowa river.....	3,000
May 6	B. F. Shaw.....	Des Moines river.....	3,000
Total.....			15,000

BROOK TROUT.

Those distributed in 1877, as shown in former report, have done exceedingly well, and, as will be seen by referring to evidences of success, prove that we have some streams in Iowa remarkably suited for these fine fish. The Commission procured from Mr. H. F. Donsman, of Waterville, Wis., January 3, 1879, 110,000 eggs. These were very successfully hatched, and a large portion of them distributed, as shown by table of distribution. We still have on hand a fine lot of them, being kept for breeders, and hope soon to be able to provide all the eggs needed from the State hatching house, without having to purchase.

BROOK TROUT DISTRIBUTION, 1879.

DATE.	BY WHOM.	IN WHAT WATERS.	NO.
Jan. 27	Thornby	Sioux City	300
Feb. 13	B. F. Shaw	Squaw creek	3,500
Feb. 20	M. M. Moulton	Monticello	1,000
Feb. 20	M. S. True	Hopkinton	1,000
Feb. 20	M. S. True	Delhi	500
Feb. 20	M. S. True	Delaware	1,500
Feb. 20	M. S. True	Enfield	1,500
Feb. 20	M. S. True	Fayette	3,000
Feb. 24	Mr. Peet	Liston	2,000
March 17	B. F. Shaw	Berlin creek	750
March 17	B. F. Shaw	Living Spring	750
March 17	B. F. Shaw	Big Rock	3,000
March 17	B. F. Shaw	Mud creek	500
March 20	B. F. Shaw	South Maquoketa	3,000
March 20	B. F. Shaw	North Maquoketa	3,000
March 21	B. F. Shaw	Earlville	5,000
March 21	Col. Van Anda	Manchester	5,000
March 21	O. O. Bennett	Plymouth, Woodbury, etc.	15,000
March 21	B. F. Shaw	Willow creek	7,000
March 21	J. Paul	Iowa City	5,000
May 2	E. L. Currier	Independence	4,000
Total			66,300

SMELTS.

Experiments have proved that these valuable fish can be very successfully introduced into fresh water lakes. Living upon different food from our game fish, and being very prolific, their introduction into our waters would be a valuable work, as they are one of the best food fishes, and would add largely to the capacity of our waters to produce the larger varieties of fish. As other commissions could more conveniently experiment with them near the home of the fish, it has been thought best to wait and have the benefit of their experience before attempting to introduce them into Iowa waters.

CARP.

There is, in my opinion, no fish known the introduction of which into Iowa waters promises so much and such general good as the carp. Their known ability to stand extremes of temperature in water, to live in stagnant pools, even burying themselves in mud to withstand extreme heat or cold; eating any and all kinds of food, especially vegetable, upon which they are known to thrive when other food fails, make them especially desirable for many of our waters in which

other fish cannot live, and exceedingly valuable for a large portion of our more sluggish and muddy streams and ponds. Desirous as I have been to procure and introduce this fish, I have so far been unable to do so; but as the United States Fish Commissioner has made several importations of them, and is now engaged quite largely in their propagation for distribution among the several states as soon as his stock on hand will warrant, I am in hopes soon, perhaps the present season, to procure enough at least for a beginning; and I have the promise of U. S. Commissioner Baird that our State shall receive a share of the fish as soon as he feels warranted in their distribution.

The introduction of a fish that makes it possible to make prolific the great amount of waters in the State that are now barren, is of vital importance, and would warrant an extraordinary effort for their introduction.

The carp in the ponds of the United States Commission at Washington, D. C., have made a wonderful growth. One was recently taken, weighing nearly five pounds, not more than three-and-a-half years old. The superintendent says this exceeds their growth in their native land.

If a sufficient supply of these fish cannot be had from the United States Commission for our purposes, some other source of supply should be applied to.

The Sonoma, California, *Index*, says:

"Mr. Poppe brought five sickly, puny, carp to Sonoma county, in 1871. In the following May they had increased in size from five to sixteen inches, and in numbers from five to three thousand. Sonoma and some other counties are now well stocked with this European stranger. Shipments have also been made to the Sandwich Islands, Nevada, and Central America." "The food of the carp consists principally of the fungus and other vegetable matter usually found at the bottom of ponds. When the fish are to be fed, which is necessary, in order to insure great size, there is no particular diet necessary, for the carp is proverbial for being the most easily satisfied fish, with regard to diet, that can be found. It eats greedily, beans, peas, blood, curds, grain, and, in fact, almost anything else. It thrives most rapidly in ponds of still water, and with muddy bottoms."

Dr. Hessel, who has charge of the carp ponds at Washington, says: "They grow to a weight of three to four-and-a-half-pounds in three years, and often attain a weight of fifteen to twenty-five pounds." The success with which they have met, in an old stagnant canal in

Washington, proves that many waste waters can be made to yield fat, luscious fish with but little trouble save their introduction.

RESULTS.

In estimating the results of any labor, it is only fair to also estimate its cost. If we take from the total amount of appropriations for fish-culture in Iowa, the cost or value of permanent improvements and necessary fixtures and implements, with cash on hand at this writing, we will have expended upon fish-culture and distribution only a sum equal to one cent for each individual in a population of 1,500,000, during the past six years. In making public improvements in some moderately populated township, if we were limited to a sum equal to only one-sixth of one cent per year for each individual, we certainly should not expect very great results. With an amount equal only to this in the past five-and-a-half years, the results obtained point to lasting benefits that will more than equal those produced by any other equal amount of money ever expended in the history of the State. With the small resources at hand, and nearly three hundred miles square of territory, it has been impossible to visit and stock every small stream or body of water, but the work has been as general as possible, and it is hoped in due time will benefit every available water in the State.

Evidences of success in fish culture are peculiarly hard to obtain. We can see growing crops from the time the seed bursts the ground until the harvest is gathered; but a lake or stream may be full of growing young fish, and present no sign of the fact. They may be caught in large quantities, and the fisherman from some cause fail to make his success known, and with fish planted in our waters this is to a certain extent the case, as I have learned in several instances. Abundant evidence has, however, in spite of these facts come to hand—and I present a few of them:

"Fishermen report more and better fish in Cedar creek this season than for many years. Bass, croppies, and perch are abundant and of good size, and 'channel catfish,' which were seldom caught before last season, are quite large, and there are a great many of them. The *Ledger* feels certain that the work of the Iowa Fish Commission in our waters is a valuable one, and that to Mr. Shaw we will be indebted for an abundance of fish in creeks almost exhausted of their natural supply. Mr. Shaw has twice made visits to this county, putting fish in Cedar near Whitefield and at Reed's mill. Many of them were of varieties almost strange to that water, and have grown to a good size, and are readily caught with hook and line."—*Fairfield Ledger*.

"MANCHESTER, April 9, 1879.

"B. F. SHAW—We are catching some fine, beautiful brook trout in Spring branch. I think you put them in from Delaware Station two years ago. I have seen them caught from eleven to sixteen inches long.

"Yours, etc.,

"S. G. VAN ANDA."

"SAGEVILLE, Dubuque county.

"B. F. SHAW—The few trout received from you have done exceedingly well; they remained in the spring a few months, then descended into a spring stream we call Bloody Run. We have seen them almost daily. They are now good size. Of course, we never catch them or if we do we always put them back. I hope the next legislature will make a liberal appropriation to carry on the work as all doubts as to its feasibility have long since been removed from my mind.

"Yours, truly,

"F. M. KNOLL."

"CEDAR RAPIDS, IOWA, Oct. 4, '79.

"B. F. SHAW, *Dear Sir*—Hearing that you have put brook trout into the brook formed by McCloud and Cooper springs, I concluded to try them. One day last spring I succeeded in catching fourteen fine ones. They would weigh from one to one-and-a-quarter pounds each. I have been told they were planted here two years ago. If so, is it not a remarkable growth?"

"I saw a large number of small ones, and to all appearances they are multiplying fast; and if people will only let them alone during spawning time, I believe we have an everlasting stock in this creek.

"Yours, truly,

"R. H. PORTER."

From the above creek, my son, E. R. Shaw, obtained twenty-two trout, of about the same size, and I counted during spawning time fourteen of the same size in one hole, and in a quarter of a mile saw and counted fifty-two on their spawning beds. They were put in this creek April 20 1877.

Charles Crosby, Esq., Manchester, under date of May 10, tells the following fish story:

B. F. SHAW, Esq.—I suppose you are always pleased to hear of the prosperity of your numerous families of fishes, and as I wrote you a short time ago of some of the speckled beauties I caught in Spring branch, I want to tell you what luck I've had this week. Monday, returning from court at Delhi, I had an hour to spend, and I captured a fellow that weighed one-and-one-half pounds. Considering that the

trout were put in there only about two years ago this sounds like a 'fish story,' and I should hesitate to tell it if I had not several witnesses of the fact. Charles Austed was with me when I caught it. It was weighed on the counter-scales at Evans' meat-market by his man, Amasa Works, in the presence of several other persons, and if that butcher is not cheating the whole town in the weight of the steaks he sells them, my trout was a plump one-and-a-half pounder. Wednesday I took three which weighed in the aggregate two pounds—two were three-fourths each and one one-half pound. A good many Eastern men here say these can't be the speckled trout because they are so large; but I have fished in many of the trout-streams of Maine and I know the fish."

"LOCKRIDGE, Nov. 3, 1879.

"DEAR SIR—I and my neighbors were surprised to see so many fish in my pond in 1877. It was the result of your planting in 1876. I have lost no fish since you put them in. My pond is too deep to fish with nets. In one day my boy caught ten catfish, fine ones, and twenty bass. I caught one a few days ago that weighed three pounds. We get catfish weighing from five to ten pounds, and bass from one to three pounds. The fish are of better quality than river fish, and the fattest I ever saw. I would like to get some of other varieties of you. Yours truly,

"A. R. PIERCE."

"SPIRIT LAKE, Oct. 20, 1879.

"B. F. SHAW—The fish you put into Spirit Lake five years ago (silver bass) are now quite plenty. They weigh from two to four pounds, and are as good game as a trout. They are caught at the head of the lake for a space of about two miles. Sometimes as high as forty or fifty have been caught in one forenoon by three or four men.

"The lake trout, put in four years ago last March, are now fine fellows, and weight from three and a-half to five pounds. Ordinary fishing will not do for them, as they are in deep water. None are caught unless fished expressly for, and but few know how to do it, for which I am glad. They will be a success in these waters. Those put in last spring are now about five inches long, and as plump and fat as can be. Now we want some herring and bass to put in the lakes here. So far, stocking the lakes here has been a success except the salmon. They have left in consequence of ways being open for them to get out. Some were found ten inches long, but have now disappeared. There is no reason why we cannot keep these lakes stocked up, if they would only stop taking them with spears in the winter. If we had a Commissioner here so that we could stock these waters every year, and have fishways made and kept open, we could supply any amount of fish. We have twenty-five square miles of water in this county, all good for most kinds of fish. They are very deep, in some places 170 feet of good, clear water.

"Your efforts to stock our waters are duly appreciated here and every one will second your efforts to increase the fish. I would recommend our lakes stocked with herring, sometimes called white fish, bass, cat, trout, salmon-trout, and in some lakes eels.

"Yours truly,

"A. A. MOSHER."

I have given nearly in full the above letter as an expression of the people in this vicinity of the best fish waters in the State.

"FARM CREEK, IOWA, Oct. 19, '79.

"DEAR SIR—I find there have been several new varieties of fish caught here this summer. I have caught three varieties different from any I have ever caught here before. Of one kind, I caught four that would weigh from 1½ to 2 pounds.

"A. McCLENAHAN."

"TOWNER'S LAKE, POLK COUNTY, IOWA, Oct. 4 '79.

"B. F. SHAW—I have not caught any of the fish I got of you last February, but they jump clear out of the water, and seem to be about a foot long; do not know whether they are the trout or salmon. I do not know about the native fish you planted, but the catch of native fish in the Coon and Des Moines rivers has been extra good the past season.

"Yours, respectfully,

"J. W. TOWNER."

"DELHI, IOWA, Sept. 5 '79.

"*Forest and Stream*.—A letter from W. G. Ellzey of Blaksburgh Va., states that trout two years old had been taken that weighed one pound. We in Delaware County beat that a long way. On the 6th of June, 1877, B. F. Shaw, fish commissioner, placed trout fry in a spring branch in this county. One caught last April weighed one-and-a-half pounds and but few caught weighing less. In August, one was taken weighing one-and-three-quarter pounds. If Virginia is a good home for trout they find a better one in Iowa. There has never been such an abundance of bass in our rivers before. The Maquoketa, running through Delaware county, is literally full. We have caught them weighing eight pounds, and in a string of fifty twenty will weigh over four pounds. A party of four of us yesterday caught seventy-five, the average weight, being two-and-a-half pounds, but many weighed three, four, and five pounds. One great trouble we have here is to compel the building of fishways in the dams. California salmon in the same stream thirteen months old are seven inches long and take a fly beautifully.

"VAN."

"CALIFORNIA TROUT IN NEW YORK.—*Mr. Editor*—I have three hundred mature California brook trout. I took 40,000 spawn from them last spring. They commenced spawning March 14th. We have 20,000 of the young now at our works. They are doing well. They do not require near the attention to raise them that it does our brook trout. I have stocked some streams with them, and they are doing finely. They grow much faster than ours, and I think they will be a good fish to stock our streams, and when the young stock we have on hand grows up we shall be able to furnish a great many young fry to stock our public waters.

"SETH GREEN."

"Rochester, September, 1878."

Of this fish I have a high opinion. Efforts to obtain them were unavailing the past season, but I hope for success in the future.

"MUSCATINE, Nov. 2, 1879.

"MR. SHAW—The brook trout we have are, I think, a pound in weight, and the largest salmon left are about the same. Mr. B. McLeoud saw considerable numbers of lake trout in Chain lake last spring. I did hope to arrange to hatch some this winter, but will have no time to devote to it.

"Yours truly,

"JOHN MILLAR."

"HAMPTON, IOWA, Oct. 3, 1879.

"B. F. SHAW—The fish I got of you one year ago last spring are doing very nicely. I had bad luck in getting the salmon home. Would be much pleased to assist to supply fish-fry to any or all streams in our county, of which we have several fine ones.

"Yours truly,

"WM. PARKS."

"PRESTON, IOWA, Sept. 20, 1879.

"B. F. SHAW, *Dear Sir*—Of the fish that I put into Deep and Copper creeks, a California salmon was caught with hook and line in Deep creek this spring that weighed three-and-a-half pounds. I caught a brook trout that weighed a pound out of a little pond I put some into two years ago; the pond is fed by springs. I hear of California salmon and trout being caught by different parties, who are fishing in Deep creek. Fish culture is going to win, in northern Iowa especially.

"Yours truly,

"BEN VAN STEINBERG."

"MANCHESTER, IOWA, June 30, 1879.

"B. F. SHAW—I caught fourteen young California salmon while fishing for brook trout; I put all but two of them back; these two were badly hooked. The largest one was just seven inches long. Spring brook seems to be swarming with them. They take the fly beautifully.

"CHAS. S. CROSBY."

The children of S. M. Yoran, representative from Jones county, caught some brook trout in a small stream near his home in which they had been planted without his knowledge. They were one year old and five or six inches long.

A letter from Williamston, Chickasaw county, Aug. 21st, speaks as follows of the unusual quantities of fish in that vicinity. The writer is a stranger to Mr. Shaw:

"Our river near here (the Wapsie) is this season teeming with black bass. There seem to be two sizes, the largest running from two to three pounds in weight, and the smaller ones from a half to one pound. I have not caught a black bass in our river of over one pound since 1872 until lately. Am I right in supposing that this sudden increase of fish here is the result of your stocking our waters with small fish from the Mississippi two or three years ago? And if so why cannot the same thing be done every year, the expense being trifling compared to what the results seem to be.

"O. O. POPPLETON,

"Sec'y Chickasaw Farmers' Ins. Co."

"GREENE, IOWA, Oct. 31, 1879.

"FRIEND SHAW—There is a good deal of dispute among our fishermen in regard to the name of the fish I sent you. During the summer and fall there has been taken a large number of these fish—all near the same size, 1½ to 2 pounds. Old settlers here say they never caught this variety of fish here before, but nice strings have been taken here nearly every day this summer. I hope the next legislature will make adequate provisions to keep up the good work. I think the State cannot appropriate funds to a more worthy object.

"Yours truly,

"C. T. LAMPSON."

The fish sent me above referred to was a yellow wall-eye. They were planted in the Shell Rock and Lime creeks in the fall of 1876, and the largest sized bass spoken of in Mr. Poppleton's letter, were planted in that stream at the crossing of the Milwaukee & St. Paul Railway in the fall of 1876; the smaller ones at the same place in 1878. The

sizes of the fish, and the fact that such fish were not there before, is conclusive evidence that they are the same fish planted there at those times.

"DAVENPORT, IOWA, 1879.

"B. F. SHAW—Is there no way to get fishways put in, and stop the seining? If one-half the penalty could go to the informant, I think there would be a show to stop it; and then we could get all the fish reasonable men could wish. I intend to try the brook-trout along the Davenport & Northwestern road in the spring and from what I hear all along the line I shall expect some nice sport. There has never been half so many fish caught to the man before as this season, and I have fished thoroughly all along our line. I am very thankful for what the Fish Commission has done. I hope you will push the work, and the needed changes be made. If so, there will not be a state in the Union that can boast of as good fishing as Iowa.

"Yours truly,

"M. S. TRUE."

"MANCHESTER, IOWA, Nov. 13, 1879.

"B. F. SHAW—Thinking you would be glad to hear the results of introduction of fish into our part of the State, I would state that the brook-trout placed in our waters by you in June, 1877, are now abundant, and large. Numbers weighing from one-and-a-half to one-and-three-fourths pounds have been taken during the summer. They are now spawning, and we have suspended fishing for them. The salmon have done exceedingly well, and are easily caught with a fly. They are from five to eight inches long. We hope for and expect good salmon fishing another season. The trout of this season's hatching put in our streams by you have done splendidly, and we hope you will be able to supply us with sufficient numbers to stock all the suitable waters in this vicinity. In relation to the native fish left in our waters from the Mississippi two years ago we find they have increased our supply wonderfully; and the fact that we have enforced the law relating to bass in not allowing them to be caught during April and May, have together filled our waters with one and two-year-old bass, until they are so plentiful that they cannot be reduced with hook and line. We hope you may be able to supply us with these fine fish until every man, woman, and child can procure an abundance of this necessary food.

Yours truly,

"S. G. VAN ANDA."

MOUNTAIN TROUT IN EASTERN WATERS.

H. W. DeLong reports the catching of half a dozen mountain trout from five to seven inches in length in a stream in western New York, where less than a year before only a few thousand had been planted; they were sent to Seth Green, who writes of them as follows:

"The fish were received. They are California mountain trout, only eleven months old. When they are two years old they will weigh one pound. You could not catch them this year. I am raising 15,000 of them—same age—and when they are large enough to spawn will be able to stock the country fast.

"SETH GREEN."

See *Forest and Stream*, May 8, 1879.

Extract from San Francisco correspondence of *Forest and Stream*, May 8, 1879:

"The Sportsman's Club of California initiated the season by offering excellent young salmon fishing in Lake Merced, within an hour's drive of this city. This fine lake, of about 2,000 acres, has been leased by the club for ten years. The great abundance of grilse which it now contains were bred by the association and placed in the lake twelve months ago when they were very small. Their average weight is now three-quarters of a pound each, which is a pretty good growth, considering that this is a fresh-water lake. On the 12th of April, the opening day, 165 fish were captured, bait angling, by twelve members of the club. 'Your humble servant to command' bagged fourteen. Since that time up to date, upward of 700 of these healthy, game, and silvery beauties have fallen captives to the anglers' alluring baits of either worms, boiled shrimps, or pieces of the small catfish or 'bull-heads' to be taken in the lake. A few of the old Lake Tahoe trout, which were planted in these waters some four or five years since, are occasionally taken, weighing from three to seven pounds."

Elihu Phinney, chairman fish commission, caught, in company with McThayer, in four and a half hours, forty-three salmon trout weighing 85 pounds in Olsego lake and say of it: "This fishing proves beyond all question that our artificial plantings have been a complete success."—*Chicago Field*, July 5, '79.

"ROMNEY, W. VA., June 12, 1879.

"PROF. S. F. BAIRD, U. S. COMMISSIONER—There are now within five miles of this place three schools of salmon, one estimated at 500, one at 2,000 and another to be a large number. They have been seen and caught by various persons. The largest I have seen caught was eleven inches long, and a California salmon. Respectfully,

"C. S. WHITE."

"SAN FRANCISCO, May 24, 1879.

"PROF. S. F. BAIRD, U. S. FISH COMMISSIONER—From fifty to one hundred and twenty shad are now being brought to market every day. They are becoming so numerous that they are regularly reported in the market reports.

"B. B. REDDING, *California Fish Commissioner*."

Fishing is good at the dams, and hundreds of pounds are caught with hooks daily. This should not be; the fish are now full of spawn, and every fish destroyed decreases our anticipations of the future.—*Ontumna Times and Democrat*, April 3, '79.

The stocking of the inland lakes (of Michigan), is now an established success, many of them having been caught and seen in different parts of the State, weighing from three to five pounds, which were planted a few years ago by the Fish Commissioners.—*Chicago Field*, April 12, 1879.

The McCloud river trout are plentiful in the streams of the Santa Cruz country. They were planted there and have grown to a good size.—*Pacific Life*, April, 1879.

Several of Shaw's brook trout planted in Kitty creek have been caught out of a little creek east of Monticello, and on the opposite side of the Maquoketa river, during the past summer, showing that the little fellows will survive the muddy water in the river each spring and run up the creeks during the summer.—*Monticello correspondence of Anamosa Journal*.

SUCCESSFUL FISH PLANTING.—On the 29th of October, 1876, about 1,000 fish from the Mississippi river, consisting of rock bass, black bass and other species, were brought here by Fish Commissioner B. F. Shaw and turned over to the Western Iowa Fish Association. They were planted in the lake on the Union Pacific grounds by A. C. Graham, of the association. Nothing was known of the success of the planting until yesterday when officer Perry Smith succeeded in taking from the lake a black bass, one of those planted in 1876. It measures six inches in length and is pronounced to be a "yearling." It is certainly a fine specimen and proves that the fish planted in our waters are thriving and breeding. A number of different species were also placed the same year in Mosquito creek, Keg creek and the Boyer river, and it is said they are doing well. The association feels grateful to Commissioner Shaw for his efforts to stock the waters near Council Bluffs with fish, and are glad to be able to report to him success. They hope to get many more this year as they have plenty of room to distribute them judiciously.—*Council Bluffs Nonpareil*.

The *Chicago Tribune*, of May 21, 1879, has a column editorial upon the success of fish planting in Geneva lake, Wis., in which is detailed the catching of a four-and-a-half pound grise a few days before by Mr. Leiter, of the firm of Field, Leiter & Co.

"SHAD IN ARKANSAS RIVER.—Last year only about thirty or forty were taken, but this spring the run has been tremendous, and the river-dwellers are in high jubilation. This addition to the food fishes is one of the many good results of the labors of the U. S. Fish Commission.

"May 22, 1879."

"EDITOR FOREST AND STREAM."

"COUNCIL BLUFFS, May 30, 1879.

"When I changed my fish into new pond I found one twelve inches long that weighed one and a-half pounds. In Bremer township, in this county, they have caught trout of your planting, weighing one pound and upward. A son of J. Hammer caught an eel one yard long one day last week.

"WM. MYNSTER."

Some few hundred salmon trout planted in a spring belonging to Fred Dumont two years ago last spring have remained in the spring notwithstanding that they could have run out at any time, and the farther fact that flood-water frequently runs in a large volume over the spring. They are now a fine size and growing rapidly.

"Horses, cattle, asses, goats and sheep, were not natives of this continent. Yet they seem to have been 'permanently engrafted on the fauna of the country.' Wheat, rye, oats, barley, and other cereals, are all imported plants, natives of other countries, and seem to have been permanently added to the flora of the country. The English pheasant is a native of the country about the Caspian Sea, yet it seems to have been permanently added to Great Britain and the North of Europe. Catfish (*Ameiurus albidus*), natives of the Schuylkill and Raritan, from sixty-nine fish taken to the Pacific coast, where the Creator did not 'manage' to distribute *any* of the species, have increased to millions, and are in nearly all of the rivers and lakes of California, a strip of territory seven hundred miles long and one hundred and fifty wide. They are as regularly sold in all the markets as the most numerous and common Pacific coast fish. Carp, originally from China, have been spread over all of Europe, and seem to be 'permanently engrafted' among the fish of that country. Nine brought from Hamburg to California in 1872, have increased until some rivers and lakes are filled with them, and they form a material source of supply of fish food to numerous people of the counties away from the coast.

"Less than a million young shad from the Hudson, placed in the Sacramento river, are filling our rivers and bays with this luxury. In five years from the first planting of 100,000, shad in their season were regularly on the fish stalls of the markets of San Francisco, selling, it is true, at seventy-five cents per pound, but sufficiently numerous for all who would pay that price.

"If it were true that foreign animals, fish, birds, and plants could not be permanently grafted on the life of another country, the editor of *Forest and Stream* would never have existed in America.

"H. D. D."

The above is an extract from a San Francisco correspondence of *Forest and Stream*.

CRESTON, IOWA, Nov. 1, '79.

"B. F. SHAW, *Dear Sir*—I thought I would write you a little something about what the results of fish planting has been in public waters

and in the reservoir at this place. Fishing has increased in quality and quantity very much in the past two years in the larger streams west of us where you deposited fish, especially in the east Nishnabotany. In the vicinity of Red Oak, Shenandoah and Riverton, the catch of bass, crappies, perch, catfish and other fish has been large and fish heavy weight; at Clarinda and Villisca, on the West Nodaway, the fishing is extremely good, especially near Clarinda. Large parties have been fishing the Skunk river very frequently and report a large catch of fish. There have been caught from Platte river crappies that would weigh nearly two pounds; and bass of three-and-a-half pounds; from the reservoir we have caught bass of $3\frac{1}{2}$ to 4 pounds weight, crappies one-and-a-half pounds, perch and sunfish one pound, and buffalo that are not more than three-and-a-half years old that weighed eight pounds, have tried to catch the salmon but they were too smart for me, but I think they are doing well and I want you sometime next year to come down and try your hand at them. Many of the fish caught here are new to us and only caught since they have been planted here.

Yours,
"JOHN HALL."

From the thousands of evidence of success in my own and others. correspondence, local items in our State of Iowa newspapers, the sporting and scientific journals of this and other countries and the reports of commissioners of fisheries, enough could be selected to fill volumes, but I have selected for publication but a limited number of such evidences as I thought would best demonstrate the success of our Iowa work. Those that refer especially to this work are from individuals who have given attention to the subjects upon which they write, and know practically of what they have written. One opinion of this kind is worth more in arriving at truth, than the opinions of any number of men whose opinions are founded upon guessing or any other method of arriving at conclusions.

Respectfully submitted.

B. F. SHAW, *Fish Commissioner.*

APPENDIX.

\ FISH DISTRIBUTION.

Mississippi river, natives, 1878.....	2,648,500
Inland water, natives, 1878.....	641,500
Shad, 1878	100,000
Lake trout, 1878.....	619,000
Lake trout, 1879.....	411,000
Salmon.....	281,500
Land locked salmon.....	15,000
Brook trout.....	66,300
Fish at hatching house.....	25,000
Salmon trout eggs.....	500,000
Total.....	5,307,800

The following petition and order were omitted from report of 1877, and are for that reason now published.

"STORM LAKE, Feb. 24, '79.

B. F. SHAW, FISH COMMISSIONER—We, the undersigned citizens of Storm Lake, Buena Vista county, Iowa, desire to place and maintain across the outlet of Storm Lake, in this county, an obstruction to the passage of fish including a wire fish dam. The fish run out of this outlet in large numbers every spring and are destroyed, and we believe such obstruction would tend largely to increase the numbers of fish in said lake. We therefore ask that in accordance with Sec. 6, Chap. 50, Laws of Fifteenth General Assembly, as amended by Chap. 70, Sec. 3, Laws of Sixteenth General Assembly, you will order that such obstruction, including wire fish dam, may be put in and maintained.

C. S. Robinson.
J. M. Russell.
Geo. Marshall.
E. S. Sutfid.
W. L. Vestal.
W. S. Lee.
J. E. Odell.
J. B. Rummell.
A. Aplington.
W. Holcomb.
J. A. Campbell.
W. C. Line.
Wm. H. Schoop.

J. C. Mirick.
J. R. Lemon.
Frank Vestal.
S. G. Highly.
S. J. Powell.
O. James.
William Hauk.
Geo. Currier.
O. D. Pettit.
P. F. Kinne.
S. W. Hobbs.
W. Slutz.
J. Slutz."

"ANAMOSA, Iowa, Feb. 26, 1877.

"TO G. S. ROBINSON, W. L. VESTAL, AND OTHERS—In the matter of petition of citizens of Storm Lake, it is hereby ordered by the Commissioner that the petition be granted, and that said obstruction may be put in and maintained by them as asked in said petition.

"B. F. SHAW, *Fish Commissioner.*"

EXPENDITURES OF FISH COMMISSION.

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REPORT OF THE STATE FISH COMMISSION.

[No. 9.]

DATE.	Number of voucher.	IN WHOSE FAVOR.	ON WHAT ACCOUNT.	AMOUNT.
1877.				
Oct. 24	331	American Express Co.	Express	\$ 9 00
Oct. 25	332	O. Burlingame	Copying	6 50
Oct. 23	333	A. Heitchen	Hardware	2 45
Oct. 29	334	Benton & Lewis	Lumber	34 59
Oct. 30	335	S. A. Pope	Carpenter	13 75
Oct. 8	336	L. Stone	Freight on salmon eggs	46 50
Nov. 30	337	American Express Co.	Express	9 55
Nov. 26	338	E. T. Barnum	Wire cloth	23 58
Nov. 30	339	G. F. Slocum	Labor	121 50
Nov. 5	340	J. Patterson	Teaming	2 50
Nov. 30	341	E. R. Shaw	Labor	60 00
Nov. 30	342	Needham & Burritt	Teams	7 20
Nov. 30	343	Watters & Co.	Fish feed	7 50
Nov. 30	344	B. F. Shaw	Salary, October and November, 1877	200 00
Nov. 24	345	Mabel Foster	Egg picking	1 50
Nov. 24	346	Alice Whiting	Egg picking	1 50
Nov. 24	347	Maggie Richards	Egg picking	1 50
Nov. 30	348	B. F. Shaw	Cash expenses	113 35
1878.				
Feb. 12	349	W. M. Skinner	Sundries	20 90
Feb. 27	350	H. Hollenbeck	Sundries	1 85
March 25	351	Benton & Lewis	Lumber	7 61
Jan. 26	352	J. G. McGuire	Lard oil, etc.	2 00
Feb. 19	353	Needham & Burritt	Livery	6 00
Feb. 19	354	Stickney & Harriman	Hardware	95
March 1	355	Oliver Brown	Picking fish eggs	4 75

Feb. 20	356	Morris Kinsey	Picking fish eggs	4 00
Jan. 12	357	Webb Field	Picking fish eggs	3 25
Jan. 30	358	N. R. Cone	Picking fish eggs	9 75
Jan. 5	359	Fred Curry	Picking fish eggs	1 50
Feb. 1	360	Mrs. G. F. Slocum	Picking fish eggs	32 50
Jan. 5	361	Lora Bowen	Picking fish eggs	7 50
March 1	362	E. R. Shaw	Labor, December, January and February	90 00
March 1	363	G. F. Slocum	Labor and board, December, January and February	178 15
March 1	364	Watters & Co.	Fish feed	6 00
March 25	365	A. Heitchen	Hardware and labor	24 60
March 25	366	G. Higby	Sundries	2 11
March 1	367	Anamosa Eureka	Printing	6 00
March 28	368	B. F. Shaw	Cash expenses	23 95
Feb. 29	369	Lew Parsons	Cash expenses	2 50
March 31	370	American Express Co.	Milk for fish feed	27 80
March 31	371	B. F. Shaw	Express	400 00
May 3	372	Anamosa Eureka	Salary, December, January, February and March	2 50
May 3	373	A. Heitchen	Printing	8 15
April 30	374	Benton & Lewis	Hardware and repairs	30 64
April 20	375	McStarkweather	Lumber	5 00
April 17	376	P. Swanson	Seine	4 00
April 30	377	Sam Chamberlain	Seine	14 00
April 30	378	G. F. Slocum	Teaming	133 60
April 30	379	E. R. Shaw	Labor, board, etc.	60 00
April 30	380	Watters & Co.	Labor, board, etc.	6 00
April 30	381	B. F. Shaw	Seines, fish feed	40 90
April 30	382	American Express Co.	Cash expenses	5 80
April 30	383	B. F. Shaw	Express	2 00
April 30	384	Jones County	Cash expenses	18 00
May 1	385	O. Burlingame	Rent of offices one year	30 00
May 1	386	B. F. Shaw	Making fishway plans	3 00
July 1	387	Hiram Goula	Cash expenses	1 00
May 29	388	D. S. W. R'y	Teaming	2 60
June 30	389	Adams Express	Freight	3 20
July 1	390	G. F. Slocum	Express	131 00
July 8	391	S. Gardner	Labor, board and team	2 50
July 8	392	P. Swanson	Work on road	1 50
July 1	393	Watters & Co.	Work on road	6 00
			Fish feed	6 00

[1880.]

REPORT OF THE STATE FISH COMMISSION.

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EXPENDITURES—CONTINUED.

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REPORT OF THE STATE FISH COMMISSION.

[No. 9.]

DATE.	Number of voucher.	IN WHOSE FAVOR.	ON WHAT ACCOUNT.	AMOUNT.
1878.				
July 18	394	J. G. Cudworth.	Tin-work.	\$ 7 50
July 5	395	A. Heitchen.	Hardware.	5 81
July 1	396	Benton & Lewis.	Lumber.	36 48
July 6	397	Anamosa Eureka.	Printing.	6 50
July 1	398	E. R. Shaw.	Labor—May and June.	70 00
July 1	399	Fred Curry.	Recovering boat.	75
July 1	400	B. F. Shaw.	Cash expenses.	94 15
July 1	401	American Express Co.	Express.	55
June 27	402	Shober Carqueville.	1000 lithographs.	31 00
August 1	403	G. F. Heald.	Glass and labor.	5 75
August 1	404	Benton & Lewis.	Lumber.	17 90
August 1	405	Watters & Co.	Fish feed.	3 00
August 1	406	E. R. Shaw.	Labor—July.	35 00
August 1	407	G. F. Slocum.	Labor and board.	51 00
August 1	408	S. Chamberlain.	Teaming.	3 00
August 1	409	C. M. & St. P. R'y.	Freight.	65
August 1	410	B. F. Shaw.	Cash expenses.	5 00
August 1	411	P. Sheridan.	Labor.	3 00
August 15	412	Gilbert, Hubbard & Co.	Seines, hangings, etc.	21 00
August 15	413	Orr & Lockett.	Meat chopper.	10 00
August 23	414	J. Foxall.	Floats.	1 50
August 30	415	Watters & Co.	Fish feed—August.	3 00
August 22	416	B. F. Shaw.	Cash expenses.	14 05
August 31	417	E. R. Shaw.	Labor—August.	35 00
August 31	418	G. F. Slocum.	Labor—August.	45 00
August 31	419	C. & N. W. R'y.	Freights.	1 94
Sept. 2	420	George Armstrong.	Cook stove.	2 50

Sept. 3	421	Wells, Gardner & Co.	Lumber.	19 42
Sept. 3	422	W. M. Skinner.	Sundries.	4 10
Sept. 3	423	A. Heitchen.	Hardware and repairs.	25 79
Sept. 3	424	Stickney & Harrimon.	Hardware and repairs.	2 40
Sept. 3	425	Benton & Lewis.	Lumber.	10 54
Sept. 3	426	T. Tompson.	Draying.	3 00
Sept. 3	427	J. G. Cudworth.	Tinware and labor.	29 26
Sept. 5	428	Hanson & Lenehan.	Groceries, etc.	9 90
Sept. 5	429	Diamond Jo.	Coal.	3 60
Sept. 7	430	Phil. Sheridan.	Labor.	5 00
Sept. 1	431	B. F. Shaw.	Cash expenses.	163 76
Sept. 1	432	C. & N. W. R'y.	Freight.	3 05
Sept. 23	433	H. H. Smyth.	Provisions.	21 10
Sept. 2	434	Farley & Wolcott.	Crackers.	13 88
Oct. 1	435	S. C. Hall.	Labor, fishing.	28 00
Oct. 1	436	George Wescott.	Labor, fishing.	22 50
Oct. 1	437	Jno. Baum.	Labor, fishing.	22 00
Oct. 1	438	Frank Baum.	Labor, fishing.	22 00
Oct. 1	439	William Dennison.	Labor, fishing.	22 00
Oct. 1	440	A. Mason.	Labor, fishing.	16 00
Oct. 1	441	E. R. Shaw.	Labor, 1 month.	35 00
Oct. 1	442	G. F. Slocum.	Labor, 1 month.	45 00
Oct. 1	443	T. G. Pelton.	Steamboat barge, etc.	200 70
Oct. 1	444	E. Hollinshead.	Labor.	4 00
Oct. 1	445	C. S. Cooper.	Labor, fishing.	22 00
Oct. 1	446	Mrs. G. S. Slocum.	Labor and board.	30 00
Oct. 1	447	W. Hoyt & Co.	Groceries.	44 13
Oct. 9	448	Darwin Dorrance.	Pilot over Rapids.	5 00
Oct. 9	449	H. W. & G. W. Kerker.	Groceries.	6 20
Oct. 25	450	D. C. Whitney.	Labor, fishing.	20 50
Oct. 25	451	Frank Walker.	Labor, fishing.	16 75
Oct. 25	452	Ed Jackson.	Labor, fishing.	16 25
Oct. 25	453	George Waldorf.	Labor, fishing.	14 25
Oct. 26	454	Steamer Last Chance.	Piloting and towing.	20 00
Oct. 26	455	George Wescott.	Labor, fishing.	20 50
Oct. 26	456	C. H. Vorhes.	Asphaltum and cement.	5 07
Oct. 30	457	A. Mason.	Laborer, fishing.	5 80
Oct. 30	458	C. S. Cooper.	Laborer, fishing.	7 50

1880.]

REPORT OF THE STATE FISH COMMISSION.

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EXPENDITURES OF FISH COMMISSION—CONTINUED.

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REPORT OF THE STATE FISH COMMISSION.

[No. 9.]

DATE.	Number of voucher.	IN WHOSE FAVOR.	ON WHAT ACCOUNT.	AMOUNT.
1868.				
Oct. 30	459	Wm. Dennison.....	Labor, fishing.....	\$ 3 00
Oct. 30	460	T. G. Pelton.....	Steamer, barge, etc.....	191 70
Oct. 30	461	E. Hollinshead.....	Labor, fishing.....	4 00
Sept. 2	462	Geo. Higby.....	Sundries.....	10 45
Oct. 4	463	C. D. Pulford.....	Groceries, meat, etc.....	13 00
Oct. 25	464	Needham & Burritt.....	Livery.....	8 00
Nov. 1	465	E. R. Shaw.....	Labor, 1 month.....	35 00
Nov. 1	466	G. F. Slocum.....	Labor, 1 month.....	45 00
Nov. 1	467	Walters & Co.....	Fish feed.....	6 00
Nov. 1	468	Mrs. G. F. Slocum.....	Labor, board, etc.....	30 00
Nov. 1	469	S. Ireland.....	Teaming.....	2 00
Oct. 14	470	Livingston Stone.....	Transportation, fish eggs.....	58 13
August 31	471	J. S. Perfect.....	Groceries.....	11 11
Nov. 3	472	S. A. Pope.....	Carpenter-work.....	16 00
Oct. 29	473	S. C. Hall.....	Cook and fishing.....	21 00
Oct. 29	474	B. F. Shaw.....	Cash expenses.....	149 32
Nov. 4	475	Frank Baum.....	Labor, fishing.....	23 60
Nov. 4	476	American Express Co.....	Express.....	20 85
Nov. 22	477	Steamer Eviston.....	Taking eggs.....	24 00
Nov. 22	478	Steamer Eaton.....	Taking eggs.....	3 00
Nov. 22	479	Steamer Pottawattamie.....	Taking eggs.....	21 00
Nov. 22	480	T. Corcoran.....	Labor, taking eggs.....	13 50
Nov. 22	481	Martin O'Keefe.....	Labor, taking eggs.....	22 50
Nov. 22	482	Axtell House.....	Board of hands.....	26 75
Nov. 22	483	James Geary.....	Express wagon.....	6 40
Nov. 22	484	S. A. Pope.....	Carpenter.....	8 00
Nov. 22	485	Needham & Burritt.....	Teams.....	4 50

Nov. 22	486	A. Hutchen.....	Hardware.....	10 66
Nov. 22	487	Benton & Lewis.....	Lumber.....	26 42
Nov. 22	488	Anamosa Eureka.....	Printing.....	2 25
Nov. 22	489	E. R. Shaw.....	Labor.....	35 00
Nov. 22	490	G. F. Slocum.....	Labor.....	45 00
Nov. 22	491	B. F. Shaw.....	Cash expenses.....	53 27
Nov. 22	492	J. G. Cudworth.....	Hardware and work.....	5 35
Dec. 6	493	S. Ireland.....	Teaming.....	1 50
1879.				
Jan'y 4	494	Billings & Robyn.....	Repairing cans.....	2 75
Jan'y 31	495	Mrs. G. F. Slocum.....	Picking eggs.....	21 70
Jan'y 31	496	G. F. Slocum.....	Labor, board, etc.....	106 60
Jan'y 31	497	H. F. Dousman.....	Trout eggs.....	220 00
Jan'y 7	498	Stickney & Harriman.....	Hardware.....	1 00
Jan'y 20	499	J. S. Perfect.....	Sundries.....	2 60
Jan'y 31	500	E. R. Shaw.....	One-half month's labor.....	17 50
Jan'y 31	501	Watters & Co.....	Fish feed.....	9 00
Jan'y 27	502	American Express Co.....	Express.....	6 65
Jan'y 28	503	B. F. Shaw.....	Cash expenses.....	22 75
March 31	504	William Cunningham.....	Ice.....	5 25
Feb'y 24	505	H. Mathewson.....	Livery and labor.....	1 25
Feb'y 26	506	Stickney & Harriman.....	Food boiler and barrels.....	6 30
March 10	507	S. Ireland.....	Teaming.....	1 00
March 28	508	Anamosa Eureka.....	Printing.....	4 80
March 26	509	Needham & Burritt.....	Livery.....	2 50
March 29	510	J. G. Parsons.....	Livery and use of trucks.....	8 00
March 31	511	Watters & Co.....	Fish feed.....	6 00
March 28	512	J. G. Cudworth.....	Tin and repairs.....	8 30
March 24	513	C. & N. W. R'y.....	Freight on coal tar.....	1 37
March 31	514	E. R. Shaw.....	One-fourth month's labor.....	8 75
March 31	515	B. F. Shaw.....	Cash expenses.....	67 75
March 29	516	Additional Penitentiary.....	Wheelbarrow.....	2 25
March 31	517	G. F. Slocum.....	Labor, team, etc.....	110 20
March 31	518	American Express Co.....	Express.....	3 40
March 31	519	B. F. Shaw.....	Postage stamps.....	4 25
March 31	520	Shaw & Slocum.....	Barn sold—Executive Council.....	100 00
April 2	521	S. Ireland.....	Teaming.....	1 00
April 15	522	George Bemrose.....	Labor.....	1 50

1880.]

REPORT OF THE STATE FISH COMMISSION.

47

EXPENDITURES—CONTINUED.

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REPORT OF THE STATE FISH COMMISSION.

[No. 9]

1880.]

REPORT OF THE STATE FISH COMMISSION.

49

DATE.	Number of voucher.	IN WHOSE FAVOR.	ON WHAT ACCOUNT.	AMOUNT.
1879.				
April	17	523 American Express Co.	Express	\$ 17 44
May	19	524 J. Rosencrans	Teaming	4 55
May	27	525 J. G. Cudworth	Steamer and repairs	13 50
May	31	526 Watters & Co.	Fish feed	6 00
May	31	527 B. F. Shaw	Cash expenses	25 50
May	31	528 Geo. Royer	Labor	9 00
May	31	529 G. F. Slocum	Labor and team	102 80
May	31	530 Needham & Burritt	Livery	3 75
May	31	531 Wm. Skinner	Sundries	7 50
May	31	532 James Williams	Rent, storage-room	7 00
May	31	533 Jones County	Rent, office one year	18 00
May	31	534 W. A. Cunningham	Ice, move fish	1 50
June	3	535 E. F. Smith	500 assorted brick	3 50
June	3	536 S. A. Pope	Casing windows	1 00
June	16	537 W. H. Grassfield	Labor	5 50
Aug.	31	538 Needham & Burritt	Livery and teams	24 17
Aug.	31	539 Benton & Lewis	Lumber	9 00
Aug.	31	540 Watters & Co.	Fish feed	107 45
Aug.	31	541 B. F. Shaw	Cash expenses	50
Aug.	31	542 C. & N. W. R'y	Freight	154 00
Aug.	31	543 G. F. Slocum	Labor, June, July and August	4 00
Aug.	31	544 P. Swanson	Two days with team	1 37
Aug.	31	545 J. S. Perfect	Sundries	1 41
Aug.	31	546 Stickney & Harriman	Hardware	1 75
Aug.	31	547 A. Heitche	Hardware	14 60
Aug.	31	548 J. S. Cudworth	Hardware	53 00
Oct.	1	549 G. F. Slocum	Labor and team, September	
Oct.	1	550 Watters & Co.	Fish feed, September	3 00
Oct.	1	551 B. F. Shaw	Cash expenses, September	10 60
Oct.	1	552 B. F. Shaw	Postage stamps, September	1 25
Total expenses from October 1, 1877, to October 1, 1879.				\$5,835 56

RECAPITULATION

Of Expenditures of Fish Commission.

Dec. 4, 1877, State warrants.....	\$ 635 86
March 1, 1878, State warrants.....	890 28
May 1, 1878, State warrants.....	363 59
July 8, 1878, State warrants.....	400 54
Aug. 1, 1878, State warrants.....	124 30
Aug. 26, 1878, State warrants.....	131 49
Oct. 1, 1878, State warrants.....	826 13
Nov. 4, 1878, State warrants.....	742 16
Dec. 4, 1878, State warrants.....	303 95
Dec. 4, 1878, Shaw & Co.....	40 00
Dec. 4, 1878, Wm. A. Mynster.....	8 00
Jan. 31, 1879, State warrants.....	412 05
April 1, 1879, State warrants.....	341 37
June 2, 1879, State warrants.....	218 74
Aug. 31, 1879, State warrants.....	329 25
Oct. 1, 1879, State warrants.....	67 85
Total.....	\$5,835 56
Balance on hand shown by last report.....	\$ 635 86
Paid by Shaw & Co.....	40 00
Paid by W. A. Mynster.....	8 00
Appropriation.....	6,000 00
Total.....	\$6,683 86
Expended as above shown.....	5,835 56
Balance on hand.....	\$ 848 30

The funds of the Fish Commission are under the control of the Executive Council (see Sec. 3, Chap. 80, Laws of Seventeenth General Assembly), and the original fully itemized bills of each of the foregoing accounts are on file in the office of Auditor of State, at Des Moines, together with the receipts for payment of the same, and were each fully examined, allowed, and indorsed by the Executive Council before warrants were drawn for the same by the Auditor of State. Duplicate accounts are also kept in the office of Commissioner at Anamosa.

ANAMOSA, IOWA, October 1, 1879.

B. F. Shaw, being duly sworn, on oath says that the foregoing account of the Fish Commissioner with the State of Iowa is true, as he verily believes.

B. F. SHAW, *Fish Commissioner.*

Subscribed in my presence by said B. F. Shaw, and by him sworn to before me, this 1st day of October, 1879.

B. H. WHITE, *Clerk.*

[L. s.]

By J. H. CHAPMAN, *Deputy.*

LIST OF FISH COMMISSIONERS.

Corrected in September, 1879.

COMMISSIONERS.	POST-OFFICE.	STATES.
Prof. Spencer F. Baird.....	Washington, D. C....	United States.....
Charles S. G. Doster.....	Prattville, Augusta Co	Alabama.....
.....	*Arkansas.....
S. R. Throckmorton.....	San Francisco.....	California.....
B. B. Redding.....	San Francisco.....	California.....
J. D. Farwell.....	Alameda.....	California.....
W. E. Sisty.....	Brookvale.....	Colorado.....
W. M. Hudson.....	Hartford.....	Connecticut.....
Robert G. Pike.....	Middletown.....	Connecticut.....
James A. Bill.....	Lyme.....	Connecticut.....
Thomas P. James (Comr. of Agriculture and <i>ex-officio</i> Comr. of Fisheries).....	Atlanta.....	Georgia.....
N. K. Fairbank.....	Chicago.....	Illinois.....
S. P. Bartlett.....	Quincy.....	Illinois.....
J. Smith Briggs.....	Kankakee.....	Illinois.....
B. F. Shaw.....	Anamosa, Jones Co.	Iowa.....
D. B. Long.....	Ellsworth.....	Kansas.....
Wm. Griffith, Pres., 160 W. Main st	Louisville.....	Kentucky.....
John B. Walker.....	Madisonville.....	Kentucky.....
Hon. C. J. Walton.....	Munfordsville.....	Kentucky.....
Hon. John A. Steele.....	Versailles.....	Kentucky.....
Hon. John H. Bruce.....	Lancaster.....	Kentucky.....
P. H. Darby.....	Princeton.....	Kentucky.....
Dr. S. W. Coombs.....	Bowling Green.....	Kentucky.....
Hon. James B. Casey.....	Covington.....	Kentucky.....
Gen. T. T. Garrard.....	Manchester.....	Kentucky.....
Hon. W. C. Allen.....	Owingsville.....	Kentucky.....
E. M. Stilwell.....	Bangor.....	Maine.....
Everett Smith.....	Portland.....	Maine.....
T. B. Ferguson, of Baltimore (address 1327 M street).....	Washington, D. C....	Maryland.....
Thomas Hughlett.....	Easton.....	Maryland.....
Theodore Lyman.....	Brookline.....	Massachusetts.....
E. A. Brackett.....	Winchester.....	Massachusetts.....
Asa French.....	Boston.....	Massachusetts.....
Eli R. Miller.....	Richland.....	Michigan.....
A. J. Kellogg.....	Detroit.....	Michigan.....
Dr. J. C. Parker.....	Grand Rapids.....	Michigan.....
1st District—Daniel Cameron.....	La Crescent.....	Minnesota.....
2d District—Wm. W. Sweeney, M. D.	Red Wing.....	Minnesota.....
3d District—R. Ormsby Sweeney, Chm.	St. Paul.....	Minnesota.....
I. G. W. Steedman, chairman.....	2803 Pine st., St. Louis	Missouri.....
John Reid.....	Lexington.....	Missouri.....
Silas Woodson.....	St. Joseph.....	Missouri.....
H. G. Parker.....	Carson City.....	Nevada.....
Samuel Webber.....	Manchester.....	New Hampshire.....
Luther Hayes.....	South Milton.....	New Hampshire.....
Albina H. Powers.....	Plymouth.....	New Hampshire.....
Dr. B. P. Howell.....	Woodbury.....	New Jersey.....
Col. E. J. Anderson.....	Trenton.....	New Jersey.....
Theodore Morford.....	Newton.....	New Jersey.....

*Have written twice to each member named on old lists and have received no response.

LIST OF FISH COMMISSIONERS—CONTINUED.

COMMISSIONERS.	POST-OFFICE.	STATES.
R. Barnwell Roosevelt, 76 Chambers St	New York.....	New York.....
Edward M. Smith.....	Rochester.....	New York.....
Richard U. Sherman.....	New Hartford.....	New York.....
Eugene G. Blackford, 809 Bedford Ave	Brooklyn.....	New York.....
L. L. Polk (Com'r of Agriculture).....	Raleigh.....	North Carolina.....
S. G. Worth (Supt. of Fisheries).....	Morgantown.....	North Carolina.....
R. R. Livingston.....	Plattsburgh.....	Nebraska.....
H. S. Kaley.....	Red Cloud.....	Nebraska.....
W. L. May.....	Fremont.....	Nebraska.....
J. C. Fisher, President.....	Coshocton.....	Ohio.....
R. Cummings, Treasurer.....	Toledo.....	Ohio.....
L. A. Harris, Secretary.....	Cincinnati.....	Ohio.....
H. J. Reeder.....	Easton.....	Pennsylvania.....
Benj. L. Hewitt.....	Holidaysburg.....	Pennsylvania.....
Jas. Duffy.....	Marietta.....	Pennsylvania.....
John Hummel.....	Selinsgrove.....	Pennsylvania.....
Robt. Dalzell.....	Pittsburgh.....	Pennsylvania.....
G. M. Miller.....	Wilkesbarre.....	Pennsylvania.....
Alfred A. Reed.....	Providence.....	Rhode Island.....
John H. Barden.....	Rockland.....	Rhode Island.....
Newton Dexter.....	Providence.....	Rhode Island.....
A. P. Butler.....	Hamburg.....	South Carolina.....
W. W. McDowell.....	Memphis.....	Tennessee.....
Geo. F. Akers.....	Nashville.....	Tennessee.....
W. T. Turley.....	Knoxville.....	Tennessee.....
†A. P. Rockwood.....	Salt Lake City.....	Utah.....
M. Goldsmith.....	Rutland.....	Vermont.....
Charles Barrett.....	Grafton.....	Vermont.....
Col. Marshall McDonald.....	Lexington.....	Virginia.....
Henry B. Miller.....	Wheeling.....	West Virginia.....
Christian S. White.....	Romney.....	West Virginia.....
N. M. Lowry.....	Hinton.....	West Virginia.....
Gov. William E. Smith, <i>ex-officio</i>	Madison.....	Wisconsin.....
Philo Dunning, President.....	Madison.....	Wisconsin.....
J. V. Jones.....	Oshkosh.....	Wisconsin.....
C. L. Valentine, Sec'y and Treasurer.....	Janesville.....	Wisconsin.....
Mark Douglas.....	Melrose, Jackson Co.	Wisconsin.....
John F. Antisdel.....	Milwaukee.....	Wisconsin.....
Christopher Hutchinson.....	Beetown, Grant Co.	Wisconsin.....
H. W. Welscher, Superintendent.....	Madison.....	Wisconsin.....

† Absent; information from Prof. J. L. Barfoot, Curator Deseret Museum.

The following letter came to hand after the foregoing report was prepared and subsequent to the close of the term it comprehends, but is deemed of such immediate importance that it is here inserted:

"FISH COMMISSIONERS, STATE OF MINNESOTA, }
"OFFICE OF ROBT. ORMSBY SWEENEY, *Chairman*, }
"ST. PAUL, MINN., November 8, 1879. }

"HON. B. F. SHAW, *Fish Commissioner of Iowa, Anamosa, Iowa*:

"MY DEAR SIR—As you are doubtless approaching your legislative season, and it may very properly fall into your province to suggest amendatory legislation on fishery matters in your State. I beg, very respectfully to remind you of the subject of my letter of last July accompanying the petition of our Minnesota citizens living on the tributaries of the Iowa river, regarding its obstruction by mill-dams, and praying your Commission's aid in having fishways built, that the fish may come up the streams as they did before the dams were constructed. Believing in the unity of our interests in fish culture, and that your good citizens will reciprocate when the matter is made clear to them and they realize that they are depriving some of us of our much esteemed right of fish catching, we have gone on in the good work of stocking the border streams with brook trout. In June last we put into the north and south branches of the Little Iowa, in different localities, 17,000 small fingerling trout, which will breed after this fall, and with reasonable protection will soon give a nucleus for the permanent replenishing of that stream. We have also put young trout into the numberless small streams in the border counties of our state, and with such splendid waters as belong to both Minnesota and Iowa, it will be but a short time before our land of lakes and streams will be a perfect Paradise for trout fishers. We are also beginning to see the realization of our planting of other kinds of fishes. We have caught young white fish in our lakes six inches long from those planted a year ago; and from three different localities, California salmon, twenty-four, twenty-five and twenty-eight inches long, weighing from five to five and a-half pounds. They were all *spent fish*, and poor compared to their condition in midsummer. Last fall some of the salmon undoubtedly bred in our lakes, and this fall we have continued evidence of their doing well. Thus you see, we hope we are at the realization of the long-looked-for fruition of our labors, and we want you to enjoy it with us, and we believe you will, as we do when we hear of any new success you have achieved in your Iowa work, the continuance of which we sincerely hope you will long live to make successful.

"Very sincerely yours,

"ROBT. ORMSBY SWEENEY,

"*Chairman Minn. Fish Com'n.*"